Sampling QA/QC Work Plan

WEST DALLAS LEAD - REMOVAL

Prepared by
Ecology And Environment, Inc.

EPA Project No.: ZT1061
Contractor Work Order No.: T06-9110-003
EPA Contract No.: 68-WO-0037

Approvals

Ecology And Environment, Inc.		EPA	
Sherri Hughes Project Director	12/2/91 Date	Warren Zehner On-Scene Coordinator	12/3/91 Date
Kenneth Clark Project Manager	12/3/91 Date		

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1.0 BACKGROUND

The [suspected] contamination is a result of:

stack emissions from the former RSR secondary lead smelter located at the southeast corner of the Singleton and Westmoreland intersection. Additional contamination originated from the improper disposal of smelting waste (battery casing chips/slag).

The following information is known about the site:

The site is located in Dallas, Dallas county Texas. The nearest residents are located within 0.1 miles of the site, in a northeast direction. Other residents or significant environments in proximity to this site are located 0.1 miles due north of the site.

The former RSR Lead Smelter was a resource recovery facility that operated for approximately 50 years before closing down in 1984. The current area under investigation is approximately 280 acres of residential, multi-family housing and multi-use area to the north of Singleton.

The types of material(s) handled by this facility are:

inorganics (heavy metals)

The volume(s) of contaminated materials to be addressed are:

An unknown volume of lead contaminated surface soil will require excavation. Site assessment activities are currently underway to identify areas with lead contamination above the 500 ppm action level. In addition to lead in surface soil, arsenic and cadmium analytes are being examined.

The contaminants of concern are:

Lead, arsenic and cadmium are the contaminants of interest.

The basis of this information may be found in:

site files located at the Texas Water Commission, the U.S. Environmental Protection Agency and the City of Dallas Health Department. The files contain extensive information regarding the assessment and court ordered (1983-1985) remediation of the lead contaminated residential areas located near the RSR Lead Smelter.

2.0 DATA USE OBJECTIVES

The objective of this project / sampling event is to determine:

- the presence of contamination within excavated soil areas and in potential airborne particulates from removal activities
- the magnitude of contamination within excavated soil areas and in potential airborne particulates from removal activities
- The effectiveness of removal techniques and engineering controls

For the purpose of:

- Risk Assessment
- Monitoring Data
- Disposal
- Cleanup verification

The data will be evaluated against:

Federal/State Action Levels

Action levels have been determined by EPA, based on guidance from EPA headquarters. Additional guidance and public health risk consultations have been provided by the Centers for Disease Control and the Agency for Toxic Substances and Disease Registry (ATSDR).

The action level for lead in soil has been set at 500 mg/Kg soil. Site assessment activities are currently underway to identify areas with lead contamination above the 500 ppm action level. In addition to lead in surface soil, arsenic and cadmium analytes are being examined. Arsenic action levels of 50 ppm have been established for all areas except for single family homes which use a 20 ppm action level. The cadmium action level has been established at 30 ppm.

During removal activities, high volume and area air sampling will be performed adjacent to removal activities. The action level for high volume ambient air samples is 1.5 ug Pb/cu. meter air. The action level for area air samples collected with personnel pumps will be one-half the OSHA PEL for lead and arsenic (25 and 5 ug/cu. meter respectively). Additionally, real-time aerosol monitoring with the RAM-1 will be performed and a 1.0 mg/cu. meter (above background) action level will be used to determine the adaquacy of dust suppression techniques.

3.0 Quality Assurance Objectives

As identified in Sections 1.0 and 2.0 the objective of this project/event applies to the following parameters:

Parameters	Matrix	Intended Use Of Data	QA Objective
Metals	Air	Risk Assessment	QA-2
Metals	Soil	Cleanup verification	QA-2
Metals	Waste Material	Disposal	QA-1
Particulates	Air	Monitoring Data	QA-1

4.0 Approach And Sampling Methodologies

4.1 Sampling Equipment

The following equipment will be utilized to obtain environmental samples from the respective media/matrix:

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
Metals in Air	High Volume Air Sampler	aluminium/steel	No

Decontamination Steps

1 Physical removal
2 Wipe with damp paper towel to remove visible dust

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
Metals in Air	Personal air sample pump	plastic/polyethyene	No

Decontamination Steps

1 Physical removal
2 Wipe with damp paper towel to remove visible dust

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
Particulates in Air	MIE RAM-1	steel	No

Decontamination Steps

1 Physical removal
2 Wipe with damp paper towel to remove visible dust

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
Metals in Soil	Trowel	stainless steel	No

Decontamination Steps

1 Physical removal
2 Non-phosphate detergent wash
3 Potable water rinse
4 Distilled/deionized water rinse

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
Metals in Waste Material	Trowel	stainless steel	No

Decontamination Steps

1 Physical removal
2 Non-phosphate detergent wash
3 Potable water rinse
4 Distilled/deionized water rinse

4.2 Sampling Design

4.2.1 Soil Sampling

The soil sampling plan is designed to determine the effectiveness of contaminated soil excavation. Samples will be collected from excavated residential lots identified during the site assessment in the approximate area bounded to the north by Bickers, to the west by Norwich, to the south by Singleton and to the east by Westmoreland. Also included is a small area along Bedford just to the east of Norwich (Figure 4-1). Samples will be collected from

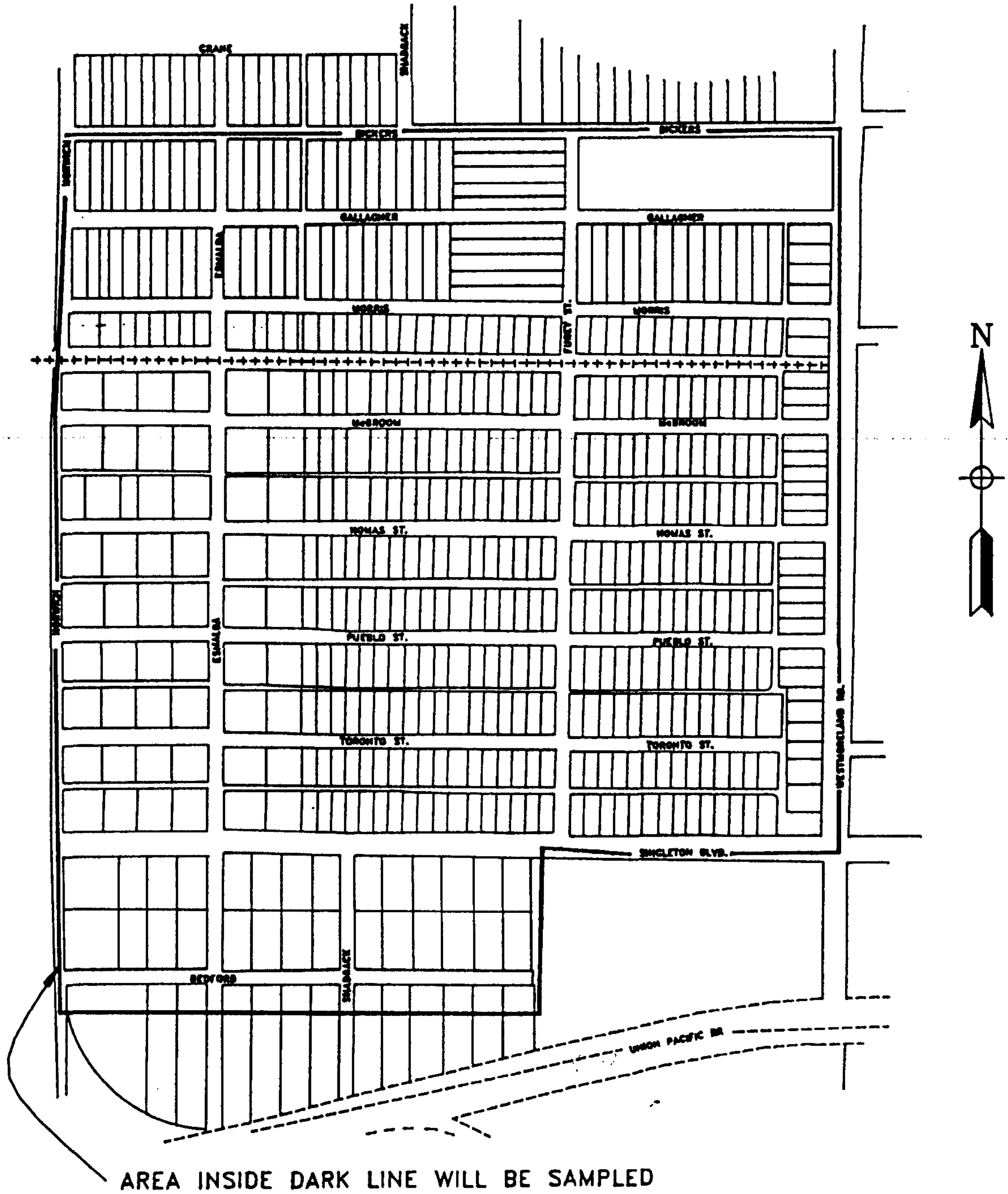

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Figure 4-1

the excavated section of each yard. A maximum of two samples will need to be collected -one sample in the front half of the lot and one sample in the back half of the lot. Each sample will consist of five evenly spaced aliqouts collected from the excavated half of the lot (Figure 4-2).

For areas that are not single-family home residential areas, a grid of no greater than 2500 square feet will be identified within the excavated area. A grid sample will consist of five evenly space aliqouts collected from the excavated grid.

For all post-excavation samples, aliquot locations within each half of a residential lot or gird will be selected on the basis of representative surface soil. Aliquot locations will not be collected within one meter of a road or driveway nor within the dripline of a house. At each of the aliquot locations, soil will be collected from 0 to 3 inches with an approximate diameter of 2 inches. The five 0-3 inch aliqouts will be combined as one sample for analysis.

4.2.2 Air Sampling/Monitoring

The air sampling program will consist of air sampling for inorganic contaminants in airborne particulates. Additionally, real-time air monitoring for airborne particulates will be performed.

The air sampling program is designed to assess the contaminant levels at the perimeter of excavation areas or areas with active contaminated soil disturbance. High volume and personal sampling pumps will be utilized to collect particulate samples for lead, and arsenic analyses. The high volume air sampling will be conducted at the OSC's discretion and in accordance with 40 CFR Part 50 Appendix G. Personal sampling pumps will be used to collect area samples in accordance to NIOSH Method 7082.

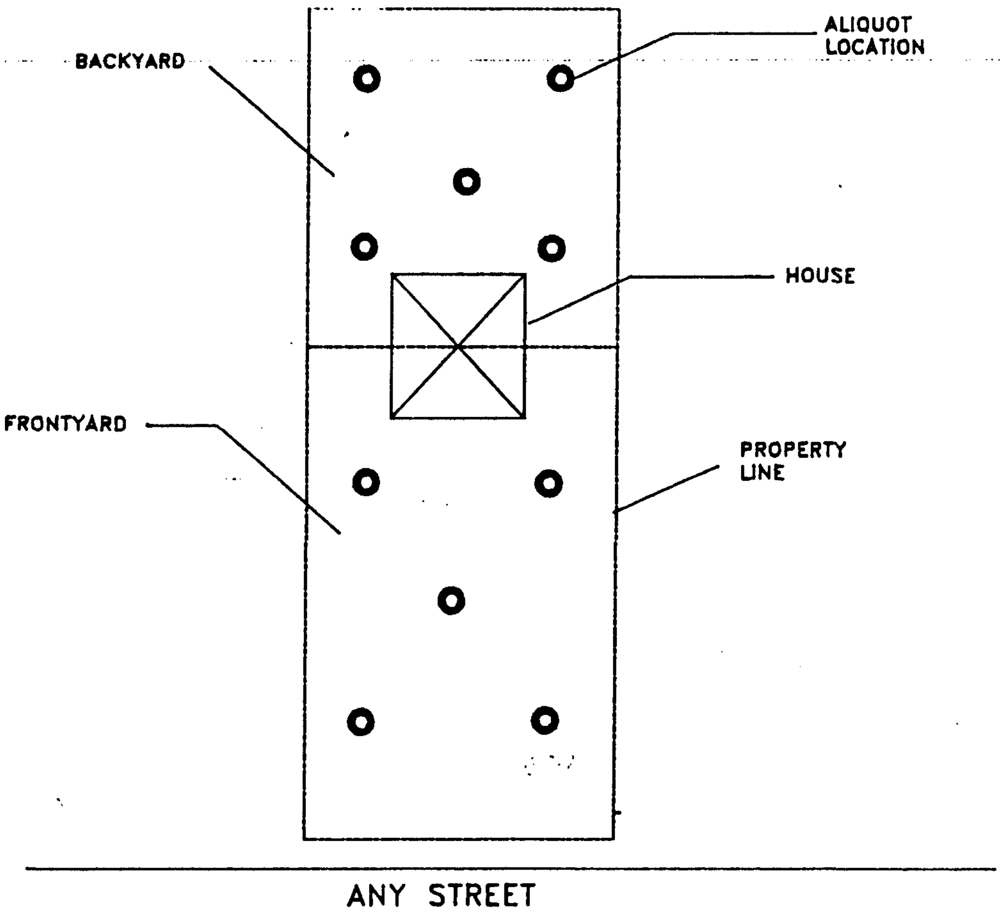
High volume air samplers will be placed at the OSC's discretion in locations surrounding the excavation area that will best measure off-site (out of the excavation area) migration into the neighboring areas. Due to the close proximity of buildings, trees and streets to most of the excavation areas, many difficulties will occur in meeting all of the criteria established in 40 CFR Part 58, Appendix E for air sampler placement; however, TAT will adhere to the criteria where practicable as site conditions allow. Established criteria for air sampler operation are as follow:

1) The sampler must be located at least 15 meters from the nearest traffic lane;

2) The sampler inlet should be at a height of at least two meters above the ground;

WEST DALLAS LEAD

RESIDENTIAL AREA



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TDD#06-9110-003	Figure 4-2
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3) The sampler must be ten meters from the dripline of any tree which acts as an obstruction;

4) Distance from sampler to obstacle, such as buildings, must be twice the height the obstacle protrudes above the sampler;

5) Must have unrestricted flow at least 270 degrees around the sampler.

6) The samplers shall be located at least 20 feet from any work/excavation area, and near the perimeter of the site.

7) Samplers shall be placed in flat areas in which the wind currents are not strongly affected by the topography of the site.

8) Vehicles and other equipment, except that equipment causing the soil disturbance being measured, that may serve as potential sources of generating dust through thier operation, will not be operated within a 15 meter radius of the sampler. At all times, care will be taken to minimize non-characteristic soil disturbances by the sampling personnel, upwind of the restricted sampling radius.

At locations where high volume samplers cannot be used or after the OSC determines that high volume sampling is no longer required, personal sampling pumps and/or real time particulate monitoring will be utilized to determine potential off-site migration.

A meteorological weather station will be set up at the Murmur track 1 property (old RSR smelter location). The station will be used to collect real-time temperature, barometric pressure, humidity, wind speed and wind direction data.

4.3 Standard Operating Procedures

4.3.1 Field Activity and Sample Documentation

Field data and information on work activities during this project will be recorded by TAT personnel in the field logbook consistent with E & E SOP-Field Activity Logbooks, GENTECH 4.1. All Chain of Custody Seals, Tags and Records must be completed in accordance with E & E SOP Laboratory and Field Personnel Chain-of-Custody Documentation and Quality Assurance\Quality Control Procedures Manual, December 1984. All EPA Contract Laboratory Program (CLP) samples must adhere to additional requirements including the organic and inorganic trafficking reports described in the User's Guide to the Contract Laboratory Program. All sample documents must be completed legibly in ink. Any corrections or revisions must be made by lining through the incorrect entry and by initialing and dating the error.

4.3.2 Soil Sampling

The soil sampling methodology referenced in this plan is consistent with generally accepted procedures of the hazardous materials industry and specific EPA soil sampling guidance referenced in EPA ERT SOP #2012.

4.3.3 Air Sampling

The high volume air sampling will be conducted in accordance with 40 CFR Part 50 Appendix G. Personal sampling pumps will be used to collect area samples in accordance to NIOSH Methods 7300 and 7900.

4.3.4 Analytical Procedure

Soil and rinsate samples will be analyzed by EPA SW-846 test method 6010 - Inductively Coupled Plasma. Acid digestions to prepare soil samples will be conducted using EPA SW-846 test method 3050. High volume air samples will be analyzed using EPA SW-846 test methods 7420 or 7421 for lead and test methods 7060 or 7061 for arsenic. Air samples collected with personal sample pumps will be analyzed using procedures described in NIOSH methods.

4.3.5 Sample Handling and Shipment

Each of the sample bottles will be sealed and labeled according to the following protocol. Caps will be secured with custody seals. Bottle labels will contain all required information including sample number, time and date of collection, analysis requested, and preservative used. Sealed bottles will be placed in large metal or plastic coolers, and padded with an absorbent material such as vermiculite.

All sample documents will be affixed to the underside of each cooler lid. The lid will be sealed and affixed on at least two sides with EPA custody seals so that any sign of tampering is easily visible.

For further information see the E & E SOP-Laboratory and Field Personnel Chain-Of-Custody Documentation and Quality Assurance/Quality Control Procedures Manual. In the event on EPA CLP sampling, see the EPA User's Guide to the Contract Laboratory Program.

4.4 Schedule of Activities

Table 1: Proposed Schedule of Work

Activity	Start Date	End Date
Air Sampling - High Volume	12/03/91	*
Air Monitoring - RAM-1	12/03/91	*
Air Sampling - Personal sample pumps	12/03/91	*
Soil Sampling	12/03/91	*

* - Until deemed unneccessary by OSC

5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA On-Scene Coordinator, Warren Zehner, will provide overall direction to Ecology And Environment, Inc. staff concerning project sampling needs, objectives and schedule.

The Ecology And Environment, Inc. Project Manager, Kenneth Clark, is the primary point of contact with the EPA On-Scene Coordinator. The Project Manager is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables.

The Ecology And Environment, Inc. Site QC Coordinator, Sherri Hughes is responsible for ensuring field adherence to the Sampling QA/QC Plan and recording any deviations. The Site QC Coordinator is also the primary project team contact with the lab.

The following sampling personnel will work on this project:

Personnel	Responsibility
Kenneth Clark	Project Manager
David Ehresmann	Site Safety (TAT)/ Sampling Coordinator
Leroy Hernandez	Team member

The following laboratories will be providing the following analyses:

Lab Name / Location	Lab Type	Parameters
M.B.A. Labs 340 S. 66th Street Houston, Texas 77011	Analytical	Pb, As and Cd in soil
To be determined	Analytical	Pb & As in air (NIOSH)
To be determined	Analytical	Pb & As in air (Hi Vol)

6.0 QUALITY ASSURANCE REQUIREMENTS

The following requirements apply to the respective QA Objectives and parameters identified in Section 3.0:

The following QA Protocols for QA-1 data are applicable to all sample matrices and include:

1. Provide sample documentation in the form of field logbooks, the appropriate field data sheets and chain of custody forms.

2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook.

3. The detection limit will be determined and recorded, along with the data, where appropriate.

The following QA Protocols for QA-2 data are applicable to all sample matrices and include:

1. Provide sample documentation in the form of field logbooks, the appropriate field data sheets and chain of custody forms. Chain of custody sheets are optional for field screening locations.

2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook.

3. The detection limit will be determined and recorded, along with the data, where appropriate.

4. Document sample holding times; this includes documentation of sample collection and analysis dates.

5. Provide initial and continuing instrument calibration data.

6. For air samples, include lot blanks, and field blanks.

7. Performance Evaluation samples are optional, if available.

8. The following two characteristics have been selected:

1. Definitive identification:

Unscreened data - confirm the identification of analytes via an EPA-approved method on all unscreened environmental samples; provide documentation such as gas chromatograms, mass spectra, etc.

2. Non-definitive quantitation:

Unscreened data - provide documentation of quantitative results.

3. QA Samples

Lot Blanks - Filters from high volume and personal sampling filter lots will be analyzed for arsenic and lead at a rate of one per lot for each filter type.

Field Blanks - A field blank for high volume and personal sampling will be performed for each ten samples collected.

MS/MSD - Martix Spike/Martix Spike Duplicate soil pairs are submitted at a rate of one set per 10 soil samples.

7.0 DELIVERABLES

The Ecology And Environment, Inc. Project Manager, Kenneth Clark, will maintain contact with the EPA On-Scene Coordinator, Warren Zehner, to keep him/her informed about the techncal and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting. Activities under this project will be reported in status and trip reports and other deliverables (e.g., analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

Draft Final Report

A (draft) final report will be prepared, by the TAT to correlate available background information with data generated under this project. Appropriate maps, figures, and attachments will supplement the written report.

Data Review

A review of the data generated under this plan will be undertaken. The assessment of data acceptability will be provided separately as part of the (draft) final report.

8.0 DATA VALIDATION

QA 1

QA-1 does not require an extensive review process. Data for this level should be evaluated for calibration and detection limits at a minimum.

QA 2

Data generated under this QA/QC Sampling Plan will be evaluated accordingly with appropriate criteria contained in the Removal Program Data Validation Procedures which accompany OSWER Directive #9360.4-1.

Specific data review activities for QA 2 should performed by the follwing approach:

1. Of the samples collected in the field, 10% will be confirmed for identification, precision, accuracy, and error determination.

2. The results of 10% of the samples in the analytical data packages should be evaluated for holding times, blank contamination, spike (surrogate/matrix) recovery, and detection capability.

3. The holding times, blank contamination, and detection capability will be reviewed for the remaining samples.

Appendix A

SOIL SAMPLING

TABLE OF CONTENTS

SOIL SAMPLING

1.0 SCOPE AND APPLICATION

This document describes the procedures for the collection of representative soil samples. Analysis of soil samples may determine whether concentrations of specific soil pollutants exceed established threshold action levels, or if the concentrations of soil pollutants present a risk to public health, welfare, or the environment.

Included in this discussion are procedures for obtaining representative samples, Quality Assurance/Quality Control measures; proper documentation of sampling activities, and recommendations for personal safety.

2.0 METHOD SUMMARY

Soil samples may be recovered using a variety of methods and equipment. These are dependent on the depth of the desired sample; the type of sample required (disturbed vs. undisturbed); and the soil type.

Near-surface soils may be easily sampled using a spade, trowel, and scoop. Sampling at greater depths may be performed using a hand auger, a power auger, or, if a test pit is required, a backhoe.

All sampling devices should be laboratory cleaned, preferably by the laboratory performing the analysis, using pesticide grade acetone (assuming that acetone is not a target compound) or methanol, then wrapped in cleaned and autoclaved aluminum foil, and custody sealed for identification. The sampler should remain in this wrapping until it is needed. Each sampler should be used for one sample only. However, dedicated samplers may be impractical if there are a large number of soil samples required. In this case, samplers should be cleaned in the field using the decontamination procedure in EPA/REAC SOP# 2006, Sample Container and Equipment Decontamination.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

The chemical preservation of solids is not generally recommended. Refrigeration is usually the best approach, supplemented by a minimal holding time.

Soil samples should be handled according to the procedures described in EPA/REAC SOP# 2003, Sample Storage, Preservation and Shipping by Parameter or Group of Parameters.

SOIL SAMPLING

INTERFERENCES AND POTENTIAL PROBLEMS

There are two primary interferences or potential problems with soil sampling. These include cross contamination of samples and improper sample collection. Cross contamination problems can be eliminated or minimized through the use of dedicated sampling equipment and bottles. If this is not possible or practical, then decontamination of sampling equipment is necessary. Improper sample collection can involve using contaminated equipment, the disturbance of the matrix resulting in compaction of the sample and inadequate homogenizing the samples where required, resulting in variable, non-representative results.

5.0 EQUIPMENT

Soil Sampling Equipment List

Sampling Plan
Maps/Plot Plan
Safety equipment, as specified in the Health and Safety Plan
Compass
Tape measure
Survey stakes or flags
Camera

Stainless steel bucket or bowl
One-quart mason jars w/Teflon liners
Plastic bags for samples and sample jars
Logbook
Labels
Chain of Custody forms
Site Description forms
Cooler(s)
Ice
Decontamination supplies/equipment

Canvas or plastic sheet
Spade or shovel
Spatula
Scoop
Trowel
Continuous flight auger
Bucket auger
Extension rods

T-Handle
Sampling trier
Vehimeyer soil sampler outfit
- Tubes
- Points
- Drive head
- Drop hammer
- Puller jack and grip
Backhoe

6.0 REAGENTS

This procedure does not require the use of reagents; except for decontamination of equipment, as required. Refer to EPA/REAC SOP# 2006 Equipment Decontamination Procedures and site specific work plan for appropriate solvents.

7.0 PROCEDURES

7.1 Office Preparation

1. The preparation of a Health and Safety Plan is required prior to any sampling. The plan must be approved and signed by the Corporate Health and Safety Officer or his/her designee.
2. Prepare a sampling plan in accordance with EPA/REAC SOP# 2014, Quality Assurance Work Plan Preparation. Review available background information (i.e. topographic maps, soil survey maps, geologic survey maps, other site reports, etc.) to determine the extent of the sampling effort, the sampling methods to be employed, and the types and amounts of equipment and supplies required.
3. Obtain necessary sampling and monitoring equipment (see Section 5). Decontaminate or pre-clean equipment, and ensure that it is in working order.
4. Contact delivery service to confirm ability to ship all equipment and samples. Determine if shipping restrictions exist.
5. Prepare schedules and coordinate with staff, client, and regulatory agencies, if appropriate.

7.2 Field Preparation

1. Identify local suppliers of sampling expendables (e.g., ice, plastic bags) and overnight delivery services (e.g., Federal Express, Emery, Purolator).
2. Decontaminate or pre-clean all equipment before soil sampling, as described in EPA/REAC SOP# 2006, Sample Container and Equipment Decontamination, or as deemed necessary.

3. A general site survey should be performed prior to site entry in accordance with the Health and Safety Plan.
4. Identify and stake all sampling locations. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions. All staked locations will be utility-cleared by the property owner prior to soil sampling.

7.3 Sample Collection

A. Surface Soil Samples

Collection of samples from near-surface soil can be accomplished with tools such as spades, shovels, and scoops. The surface material can be removed to the required depth with this equipment, then a stainless steel or plastic scoop can be used to collect the sample.

This method can be used in most soil types but is limited to sampling near surface areas. Accurate, representative samples can be collected with this procedure depending on the care and precision demonstrated by the sampling technician. The use of a flat, pointed mason trowel to cut a block of the desired soil can be helpful when undisturbed profiles are required. A stainless steel scoop, lab spoon, or plastic spoon will suffice in most other applications. Care should be exercised to avoid the use of devices plated with chrome or other materials. Plating is particularly common with garden implements such as potting trowels.

The following procedure is used to collect the soil samples:

1. Carefully remove the top layer of soil to the desired sample depth with a precleaned spade.

2. Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which comes in contact with the shovel.

3. Transfer sample into an appropriate sample container with a stainless steel or plastic lab spoon, or equivalent. If composite samples are to be collected, place the soil sample in a stainless steel or plastic bucket, and mix thoroughly to obtain a homogeneous sample representative of the entire sampling interval. Then, place soil sample into labeled containers.

4. Samples for volatile organic analysis will be collected directly from the bottom of the hole before mixing the sample to minimize volatilization of contaminants.

   Check that the Teflon liner is present in the cap, if required. Secure the cap tightly. The chemical preservation of solids is generally not recommended. Refrigeration is usually the best approach, supplemented by a minimal holding time. Refer to EPA/REAC SOP# 2003, Sample Storage, Preservation, and Shipping by Parameter or Group of Parameters.

   Check to be sure that enough sample has been collected for the desired analysis, as specified in Sampling Plan.

7. Decontaminate equipment between samples, according to EPA/REAC SOP# 2006, Sample Container and Equipment Decontamination.

8. Fill in the hole and replace grass turf if necessary.

9. Collect QA/QC samples as specified, according to the QAWP.

10. Collect background samples if specified in the sampling plan (work plan) using the procedure outlined in steps 1-7 above.

B. Sampling at depth with Augers and Thin Wall Tube Samplers

This system consists of an auger, a series of extensions, a "T" handle, and a thin-wall tube sampler (Appendix A). The auger is used to bore a hole to a desired sampling depth, and is then withdrawn. The auger tip is then replaced with a tube core sampler, lowered down the borehole, and driven into the soil at the completion depth. The core is then withdrawn and the sample collected.

Several augers are available. These include: bucket type, continuous flight (screw), and posthole augers. Bucket type are better for direct sample recovery as they provide a large volume of sample in a short time. When continuous flight augers are used, the sample can be collected directly off the flights, which are usually at five (5) feet intervals. The continuous flight augers are satisfactory for use when a composite of the complete soil column is desired. Posthole augers have limited utility for sample collection as they are designed to cut through fibrous, rooted, swampy soil.

SOIL SAMPLING

The following procedure will be used for collecting soil samples with the hand auger:

1. Attach the auger bit to a drill rod extension, and attach the "T" handle to the drill rod.

2. Clear the area to be sampled of any surface debris (e.g.: twigs, rocks, litter). It may be advisable to remove the first 3 to 6 inches of surface soil for an area approximately 6 inches in radius around the drilling location.

3. Begin augering, periodically removing and depositing accumulated soils onto a canvas or plastic sheet spread near the hole. This prevents accidental brushing of loose material back down the borehole when removing the auger or adding drill rods. It also facilitates refilling the hole, and avoids possible contamination of the surrounding area.

4. After reaching the desired depth, slowly and carefully remove the auger from boring. When sampling directly from the auger, collect sample after the auger is removed from boring and proceed to Step 10.

5. Remove auger tip from drill rods and replace with a pre-cleaned thin-wall tube sampler. Install proper cutting tip.

6. Carefully lower the tube sampler down the borehole. Gradually force the tube sampler into soil. Care should be taken to avoid scraping the borehole sides. Avoid hammering the drill rods to facilitate coring as the vibrations may cause the boring walls to collapse.

7. Remove the tube sampler, and unscrew the drill rods.

8. Remove the cutting tip and the core from device.

9. Discard the top of the core (approximately 1 inch), as this represents material collected before penetration of the layer in question. Place the remaining core into the sample container.

10. If required, ensure that a Teflon liner is present in the cap. Secure the cap tightly onto the sample container and place on ice immediately after collection. Freezing may be required. Consult EPA/REAC SOP# 2003, Sample Storage, Preservation, and Shipping by Parameter or Groups of Parameters.

11. Carefully and clearly label the container with the appropriate sample tag addressing all the categories or parameters listed in EPA/REAC SOP# 2002, Sample Documentation.

12. Use the Chain-of-Custody Form to document the types and numbers of soil samples collected and logged.

13. Record the time and date of sample collection as well as a description of the sample in the field logbook.

14. If another sample is to be collected in the same hole, but at a greater depth, reattach the auger bit to the drill and assembly, and follow steps 3 through 11, making sure to decontaminate the auger and tube sampler between samples.

15. Abandon the hole according to applicable State regulations. Generally, shallow holes can simply be backfilled with the removed soil material.

16. Decontaminate the sampling equipment as per EPA/REAC SOP# 2006, Sample Container and Equipment Decontamination.

C. Sampling at Depth with a Trier

1. Insert the trier (Appendix B) into the material to be sampled at a 0o to 45o angle from horizontal. This orientation minimizes the spillage of sample. Extraction of samples might require tilting of the containers.

2. Rotate the trier once or twice to cut a core of material.

3. Slowly withdraw the trier, making sure that the slot is facing upward.

4. Transfer the sample into a suitable container with the aid of a spatula and/or brush.

5. If required, ensure that a Teflon liner is present in the cap. Secure the cap tightly onto the sample container. Samples are handled in accordance with EPA/REAC SOP# 2003, Sample Storage, Preservation, and Shipping by Parameter or Groups of Parameters.

6. Carefully and clearly label the container with the appropriate sample tag addressing all the categories or parameters listed in EPA/REAC SOP# 2002, Sample Documentation.

SOIL SAMPLING

7. Use the Chain-of-Custody Form to document the types and numbers of soil samples collected and logged.

8. Record the time and date of sample collection as well as a description of the sample and any associated air monitoring measurements in the field logbook.

9. Abandon the hole according to applicable State regulations. Generally, shallow holes can simply be backfilled with the removed soil material.

10. Decontaminate sampling equipment as per EPA/REAC SOP# 2006, Sample Container and Equipment Decontamination.

D. Sampling at Depth with a Split Spoon (Barrel) Sampler

The procedure for split spoon sampling describes the extraction of undisturbed soil cores of 18 or 24 inches in length (Appendix C). A series of consecutive cores may be sampled to give a complete soil column, or an auger may be used to drill down to the desired depth for sampling. The split spoon is then driven to its sampling depth through the bottom of the augured hole and the core extracted.

This sampling device may be used to collect such information as soil density. All work should be performed in accordance with ASTM D 1586-84, Penetration Test and Split Barrel Sampling of Soils.

1. Assemble the sampler by aligning both sides of barrel and then screwing the bit on the bottom and the heavier head piece on top.

2. Place the sampler in a perpendicular position on the sample material.

3. Using a sledge hammer or well ring, if available, drive the tube. Do not drive past the bottom of the head piece or compression of the sample will result.

4. Record the length of the tube used to penetrate the material being sampled, and the number of blows required to obtain this depth.

SOIL SAMPLING

5. Withdraw the sampler, and open by unscrewing bit and head and splitting barrel. If split sampler is desired, a cleaned, stainless steel knife should be used to divide the tube contents in half, longitudinally. This sampler is available in 2 and 3 1/2 inch diameters. The required sample volume may dictate the use of the larger barrel. When split tube sampling is performed to gain geologic information, all work should be performed in accordance with ASTM D 1586-67 (reapproved 1974).

6. Cap the sample container, place in a double plastic bag and attach the label and custody seal. Record all pertinent data in field log book and complete the sample analysis request form and Chain of Custody record before taking the next sample.

7. If required, preserve and/or place the sample on ice.

8. Follow proper decontamination procedures and then deliver sample(s) to the laboratory for analysis.

E. Test Pit/Trench Excavation

These relatively large excavations are used to remove sections of soils, when detailed examination of soil characteristics (horizontal, structure, color, etc.) are required. It is the least cost effective sampling method due to the relatively high cost of backhoe operation.

1. Prior to any excavations with a backhoe, it is important to ensure that all sampling locations are clear of utility lines and poles (subsurface as well as above surface).

2. Using the backhoe, a trench is dug to approximately 3 feet in width and approximately 1 foot below the cleared sampling depth. Place removed or excavated soils on canvas or plastic sheets, if necessary. Trenches greater than 5 feet deep must be sloped or protected by a shoring system, as required by OSHA regulations.

3. A shovel is used to remove a 1 to 2 inch layer of soil from the vertical face of the pit where sampling is to be done.

4. Samples are taken using a trowel, scoop, or coring device at the desired intervals. Be sure to scrape the vertical face at the point of sampling to remove any soil that may have fallen from above, and to expose fresh soil for sampling. Samples are removed and placed in an appropriate container.

5. If required, ensure that a Teflon liner is present in the cap. Secure the cap tightly onto the sample container. Samples are handled in accordance with EPA/REAC SOP 2003, Sample Storage, Preservation, and Shipping by Parameter or Groups of Parameters.

6. Carefully and clearly, label the container with the appropriate sample tag addressing all the categories or parameters listed in EPA/REAC SOP # 2002, Sample Documentation.

7. Use the Chain-of-Custody Form to document the types and numbers of soil samples collected and logged.

8. Record the time and date of sample collection as well as a description of the sample and any associated air monitoring measurements in the field logbook.

9. Abandon the hole according to applicable State regulations. Generally, shallow holes can simply be backfilled with the removed soil material.

10. Decontaminate sampling equipment including the backhoe bucket, as per EPA/REAC SOP # 2006, Sample Container and Equipment Decontamination.

7.4 Post Operation

A. Field

1. Decontaminate all equipment according to EPA/REAC SOP# 2006, Sample Container and Equipment Decontamination.

B. Office

1. Finalize field notes into a report format and/or transfer logging information to appropriate forms.

8.0 CALCULATIONS

There are no specific calculations required for these procedures.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

9.1 Sampling Documentation

A. All soil samples shall be documented in accordance with EPA/REAC SOP# 2002, Sample Documentation. The soil sample label is filled out prior to collecting the sample, and should contain the following:

1. Site name or identification.
2. Sample location and identifier.
3. Date samples were collected; in a day, month, year format (e.g., 03 JAN 88 for January 3, 1988).
4. Time of sample collection, using 24 hour clock in format hours and minutes.
5. Sample depth interval. Units used for depths should be in feet and tenths of feet.
6. Preservatives used, if any.
7. Analysis required.
8. Sampling personnel.
9. Comments and other relevant observations (e.g., color, odor, sample technique).

B. Logbook

A bound, field notebook will be maintained by field personnel to record daily activities, including sample collection and tracking information. A separate entry will be made for each sample collected. These entries should include information from the sample label and a complete physical description of the soil sample including texture, color (including notation of soil mottling) consistency, moisture content, cementation, and structure.

C. Chain of Custody

Use the Chain-of-Custody Form to document the types and numbers of soil samples collected and logged. Refer to EPA/REAC SOP# 2002, Sample Documentation for directions on filling out this form.

9.2 Sampling Design and Quality Assurance

1. Sampling situations vary widely and therefore no universal sampling procedure can be recommended. However, a sampling plan should be implemented before any sampling operation is attempted.

2. Any of the sampling methods described here should allow a representative soil sample to be obtained if the sampling plan is properly designed.

3. Consideration must also be given to the collection of a sample representative of all horizons present in the soil. Selection of the proper sampler will facilitate this procedure.

4. A stringent quality assurance project plan should be outlined before any sampling operation is attempted. This should include, but not be limited to, laboratory clean samplers and sample containers, chain of custody procedures, and duplicate samples.

10.0 DATA VALIDATION

The data generated will be reviewed according to the Quality Assurance/Quality Control considerations identified in Section 9.0.

11.0 HEALTH AND SAFETY

A. Hazards Associated with On-Site Contaminants

Depending upon site-specific contaminants, various protective programs must be implemented prior to soil sampling. The site Health and Safety plan should be reviewed with specific emphasis placed on a protection program planned for other direct contact tasks. Standard safe operating practices should be followed including minimization of contact with potential contaminants in both the vapor phase and solid matrix by using both respirators and disposable clothing.

Use appropriate safe work practices for the type of contaminant expected (or determined to be in previous sampling efforts):

1. Particulate or Metals Contaminants

   - Avoid skin contact with and/or incidental ingestion of soils and dusts.
   - Use long sleeve protective gloves.

2. Volatile Organic Contaminants

   - Pre-survey the site with an FID/PID prior to taking soil samples.
   - If monitoring results indicate organic constituents, sampling activities may be conducted in Level C protection. At a minimum, skin protection will be afforded by disposable protective clothing.

B. Physical Hazards Associated with Soil Sampling

1. Lifting injuries associated with moving equipment.

2. Heat/cold stress as a result of exposure to extreme temperatures and protective clothing.
3. Slip, trip, fall conditions as a result of site obstacles.
4. Restricted mobility due to the wearing of protective clothing.

12.0 REFERENCES

Mason, B.J., Preparation of Soil Sampling Protocol: Technique and Strategies. 1983 EPA-600/4-83-020.

Barth, D.S. and B.J. Mason, Soil Sampling Quality Assurance User's Guide. 1984 EPA-600/4-84-043.

USEPA. Characterization of Hazardous Waste Sites - A Methods Manual: Volume II. Available Sampling Methods, Second Edition. 1984 EPA-600/4-84-076.

de Vera, E.R., B.P. Simmons, R.D. Stephen, and D.L. Storm. Samplers and Sampling Procedures for Hazardous Waste Streams. 1980 EPA-600/2-80-018.

ASTM D 1586-67 (reapproved 1974), ASTM Committee on Standards, Philadelphia, PA.

SOIL SAMPLING

APPENDIX A

SAMPLING AUGER

SOIL SAMPLING

APPENDIX B

SAMPLING TRIER

SOIL SAMPLING

APPENDIX C

SPLIT SPOON SAMPLER

EXISTING QASP ADDENDUM FORM

Site Name: West Dallas Lead Location: Dallas, Dallas County, Texas

Project Number/TDD/PAN: 7T1061 / T06-9107-015 / ET61295SAA

TAT PM: Kenneth Clark TAT PD: Sherri Hughes

Date of Original QASP: 8-23-91 DRAFT#: ____ FINAL#: ____

Date of QASP Amendment: 9-9-91

Added or Modified Activities and QA Levels: See Attached

Reason(s) for Change: Add sampling design for Phase II activities

The Terms of the original QASP shall be in effect as noted on this form.

	Print	Signature	Date
Prepared By:			
Team Leader:			
OSC:			

041692

ADDENDUM #1

WEST DALLAS LEAD - PHASE II

The purpose of this QASP addendum is to add the activities to be included for Phase II sampling at the West Dallas Lead site. Data Use Objectives, Quality Assurance Objectives, Project Organization and Responsibilities and Quality Assurance Requirements will not change by the addition of this addendum. Sampling design will be different for Phase II activities and is summarized below.

A 200 x 200 feet grid will be established over the Lake West Housing area from the intersection of Westmoreland Street and Singleton Boulevard out to the one-half mile radius boundary from the RSR Smelter (see map, figure 1-1a). This area comprises the northeast quadrant of the one-half mile circular area surrounding the smelter. The area within this quadrant that was previously remediated during the 1983 cleanup (Area A), will be included in the grid but will not be sampled during Phase II.

Grids will be designated by a letter (x axis) and a number (y axis). Grids will be marked in the southwest corner with their unique letter-number coordinates. Within each of the 200 x 200 feet grids, 10 aliquots will be taken from random locations as selected from a random number table (Abridged Handbook of Tables for Probability and Statistics, 2nd Edition. 1968). Two numbers will be taken from the list, in the order provided, for aliquot location designation; for example the numbers 30 and 15 would indicate that the aliquot would be taken at the point 30 feet east and 15 feet north of southwest corner of the grid. Figure 1-2a illustrates the grid design and random sample location scheme.

At each of the aliquot locations, soil will collected from 0 to 3 inches with an approximate diameter of 2 inches. Additionally, six inches to the north of the 0-3 inch aliquot location a 0-1 inch aliquot will be collected with an approximate diameter of 2 inches. The ten 0-3 inch aliquots will be combined as one sample and the 0-1 inch aliquots will be combined as one sample for a total of two samples representing a 200 x 200 feet square area.

Homogenization, decontamination and containerization procedures will be conducted as specified in the original QASP document.